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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,918	09/05/2003	Robin M. Forbes Jones	TAV-2044	8375

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EXAMINER

ALEXANDER, MICHAEL P

ART UNIT PAPER NUMBER

1742

DATE MAILED: 01/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,918	FORBES JONES ET AL.	
	Examiner	Art Unit	
	Michael P. Alexander	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 35-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 and 50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/2/04, 12/8/04</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS: 2/1/05, 3/10/05, 4/8/05</u> . |

DETAILED ACTION

Claim(s) 1-49 is/are pending.

Election/Restrictions

Claims 35-49 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12 December 2005.

Renumbering of Claims

There are two claims labeled as claim 31. The Examiner renumbers the second of the claims as claim 50.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 21, 24-25 and 50 are rejected under 35 U.S.C. 102(a) as being anticipated by the MP35N alloy material shipped to FWM on December 10, 2002 (see Exhibit 5).

Regarding claim(s) 21, 24-25, the alloy comprised of, in weight percent based on total alloy weight: at least 20 cobalt; 34.76 Ni; 20.46 Cr; 9.46 Mo; 0.008 C; 0.03 Mn; 0.02 Si; 0.001 P; less than 0.01 Ti; 0.001 S; 0.32 Fe; and 0.009 B. The Examiner

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asserts that the alloy would inherently be "substantially free of titanium nitride and mixed metal carbonitride inclusions" because the alloy only contains 36 ppm of nitrogen.

Regarding claim 50, the Examiner asserts that the alloy would inherently qualify for use in surgical implant applications under ASTM standard specification F 562.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-11, 16-25 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft et al. (Inclusions and the EB Refining of Superalloys).

Regarding claim(s) 1-2 and 5-8, ASTM F 562-02 teaches (Table 1) an alloy comprising, in weight percent based on total alloy weight: at least 20 cobalt; 33.0 to 37.0 nickel; 19.0 to 21.0 chromium; 9.0 to 10.5 molybdenum; up to 0.025 carbon; up to 0.15 manganese; up to 0.15 silicon; up to 0.015 phosphorus; up to 0.010 sulfur; up to

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1.0 iron; and up to 0.015 boron. ASTM F 562-02 does not specify that the alloy would contain less than 20 ppm nitrogen.

Still regarding claims 1-2 and 5-8, Cockcroft teaches (page 143-144) reducing the nitrogen content of superalloys using electron beam melting in order to eliminate TiN inclusions. It would have been obvious to one of ordinary skill in the art to modify the superalloy composition of ASTM F 562-02 by reducing the nitrogen content using electron beam melting in order to eliminate TiN inclusions as taught by Cockcroft.

Regarding claims 3-4 and 9-10, ASTM F 562-02 teaches (Table 1) that the alloy would comprise of up to 1.0 weight percent titanium, which overlaps with the claimed ranges of titanium, which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select the claimed amount of titanium from the range of titanium disclosed by ASTM F 562-02 because ASTM F 562-02 teaches the same utility throughout the disclosed range.

Regarding claim 11, the Examiner asserts that the alloy of ASTM F 562-02 in view of Cockcroft would inherently be substantially free of titanium nitride and mixed metal carbonitride inclusions.

Regarding claim 16, ASTM F 562-02 does not specify that the alloy would not exhibit significant oxygen embrittlement at grain boundaries. However, Cockcroft teaches (page 143-144) reducing the oxygen content of superalloys using electron beam melting in order to eliminate MgO inclusions. It would have been obvious to one of ordinary skill in the art to modify the superalloy composition of ASTM F 562-02 by reducing the oxygen content using electron beam melting in order to eliminate MgO

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inclusions as taught by Cockcroft. The Examiner asserts the alloy of ASTM F 562-02 in view of Cockcroft would inherently not exhibit significant oxygen embrittlement at grain boundaries.

Regarding claim 17, ASTM F 562-02 teaches (Table 1) that the alloy would comprise of up to 1.0 weight percent titanium and does not specify that it is necessary to contain any titanium. The Examiner asserts that this range overlaps with the claimed range of being "substantially free of titanium", which is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select an alloy being substantially free of titanium from the range of titanium disclosed by ASTM F 562-02 because ASTM F 562-02 teaches the same utility throughout the disclosed range.

Regarding claim 18, ASTM F 562-02 does not specify that the alloy would be substantially free of nitrogen. However, Cockcroft teaches (page 143-144) reducing the nitrogen content of superalloys using electron beam melting in order to eliminate TiN inclusions. It would have been obvious to one of ordinary skill in the art to modify the superalloy composition of ASTM F 562-02 by reducing the nitrogen content using electron beam melting in order to eliminate TiN inclusions as taught by Cockcroft. The Examiner asserts that the alloy of ASTM F 562-02 in view of Cockcroft would inherently be "substantially free of nitrogen" as claimed.

Regarding claim 19, the Examiner asserts that the alloy of ASTM F 562-02 in view of Cockcroft would inherently have an endurance limit greater than 100 ksi

because the alloy would have substantially the same composition as that of the claimed invention.

Regarding claim 20, the Examiner asserts that the alloy of ASTM F 562-02 in view of Cockcroft would inherently qualify for use in surgical implant applications under ASTM standard specification F 562.

Regarding claim 21, ASTM F 562-02 teaches (Table 1) an alloy comprising, in weight percent based on total alloy weight: at least 20 cobalt; 33.0 to 37.0 nickel; 19.0 to 21.0 chromium; 9.0 to 10.5 molybdenum; up to 0.025 carbon; up to 0.15 manganese; up to 0.15 silicon; up to 0.015 phosphorus; up to 0.010 sulfur; up to 1.0 iron; and up to 0.015 boron. ASTM F 562-02 does not specify that the alloy would be substantially free of titanium nitride and mixed metal carbonitride inclusions.

Still regarding claim 21, Cockcroft teaches (page 143-144) reducing the nitrogen content of superalloys using electron beam melting in order to eliminate TiN inclusions. It would have been obvious to one of ordinary skill in the art to modify the superalloy composition of ASTM F 562-02 by reducing the nitrogen content using electron beam melting in order to eliminate TiN inclusions as taught by Cockcroft. The Examiner asserts that the alloy of ASTM F 562-02 in view of Cockcroft would inherently be substantially free of titanium nitride and mixed metal carbonitride inclusions.

Regarding claims 22-23, ASTM F 562-02 does not specify that the alloy would contain less than 20 ppm nitrogen. However, Cockcroft teaches (page 143-144) reducing the nitrogen content of superalloys using electron beam melting in order to eliminate TiN inclusions. It would have been obvious to one of ordinary skill in the art to

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modify the superalloy composition of ASTM F 562-02 by reducing the nitrogen content using electron beam melting in order to eliminate TiN inclusions as taught by Cockcroft.

Regarding claims 24-25, see the rejection of claims 3-4.

Regarding claim 30, see the rejection of claim 16.

Regarding the first claim 31, see the rejection of claim 19.

Regarding the second claim 31, see the rejection of claim 20.

Regarding claims 32-33, ASTM F 562-02 teaches (Section 1.1) that the alloy would be in the form of a bar or wire.

Claims 12, 14, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft as applied to claims 1 and 21 above, and further in view of Snape (US 3,816,106).

Regarding claims 12 and 26, ASTM F 562-02 does not specify that the alloy would contain 0.05 to 0.15 aluminum. However, Snape teaches (col. 2 lines 32-44) adding 0.02 to 1 percent of aluminum in order to increase strength and minimize hot workability problems. Overlapping ranges is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to modify the alloy of ASTM F 562-02 by adding the desired amount of aluminum in order to increase strength and minimize hot workability problems as taught by Snape.

Regarding claims 14 and 28, ASTM F 562-02 does not specify that the alloy would contain 5 to 50 ppm of magnesium. However, Snape teaches (col. 2 lines 23-31) adding 20 to 50 ppm of magnesium in order to improve hot workability. It would have been obvious to one of ordinary skill in the art to modify the method of ASTM F 562-02

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by adding 20 to 50 ppm of magnesium in order to improve hot workability as taught by Snape.

Claims 13 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft as applied to claims 1 and 21 above, and further in view of Susukida et al. (US 4,474,733).

Regarding claims 13 and 27, ASTM F 562-02 does not specify that the alloy would contain 5 to 20 ppm of calcium. However, Susukida teaches (col. 3 lines 23-32) adding 5 to 500 ppm of calcium in order to improve hot workability. Overlapping ranges is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to modify the alloy of ASTM F 562-02 by adding the desired amount of calcium in order to improve hot workability as taught by Susukida.

Claims 15 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft as applied to claims 1 and 21 above, and further in view of Mueller et al. (US 3,787,202).

Regarding claims 15 and 29, ASTM F 562-02 does not specify that the alloy would contain 5 to 50 ppm of cerium. However, Mueller teaches (col. 2 lines 55-63) adding up to 0.12% cerium in order to improve hot workability. Overlapping ranges is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to modify the alloy of ASTM F 562-02 by adding the desired amount of cerium in order to improve hot workability as taught by Mueller.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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